

# THE CHEMIST

APRIL 1950



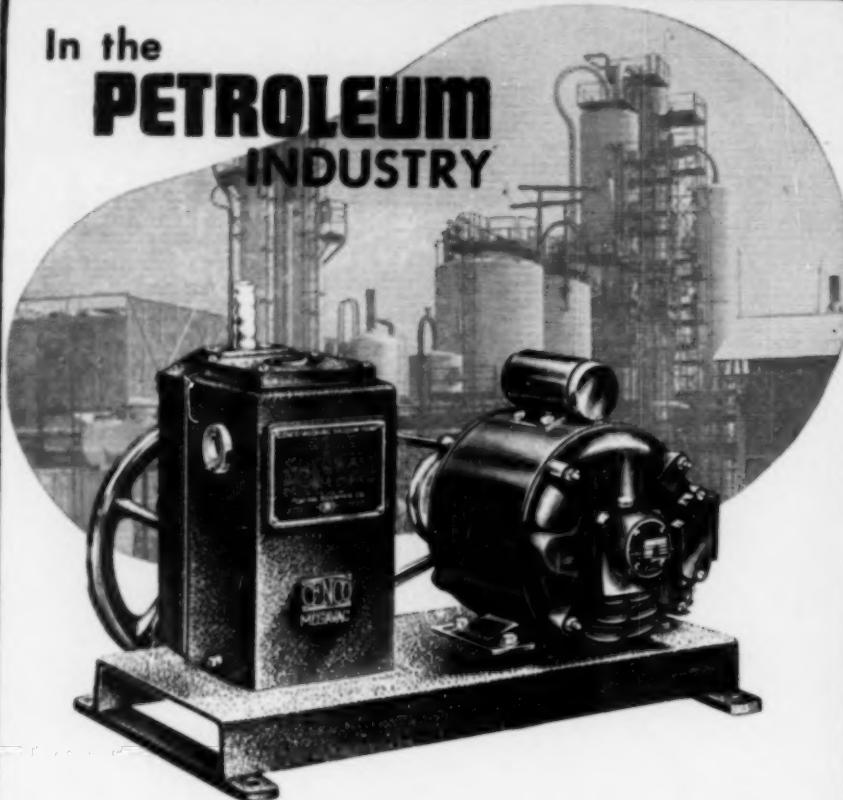
VOLUME XXVII No. 4



**MORRIS KATZMAN**

*Chairman, Los Angeles Chapter*  
(see page 115)

In the  
**PETROLEUM  
INDUSTRY**



## THE CENCO-MEGAVAC PUMP

combines in a single mechanical unit high ultimate vacuum with high pumping speeds for fractional distillations, temperature and pressure measurements and other laboratory or pilot plant procedure which requires fast initial evacuation. This unit is proved for dependable and trouble-free service. Speed at 1 micron, 375 ml; vacuum, 0.1 micron or better.



Write Dept. G. for engineering Bulletin 10B "High Vacuum Equipment."

Specify No. 92015A Cenco-Megavac Pump mounted with base and motor for 115 volt, 60 cycle AC operation.

\$195.00

(Also available with motors for other voltages and frequencies)

**CENTRAL SCIENTIFIC COMPANY**

Scientific Apparatus • Instruments • Chemicals

1700 IRVING PARK ROAD CHICAGO 13

NEW YORK BOSTON SAN FRANCISCO NEWARK LOS ANGELES TORONTO MONTREAL

FOR AMERICA'S LABORATORIES...

**A New, Completely Direct-Reading Analytical Balance . . .**

**THE *Gram-atic*  
BALANCE**

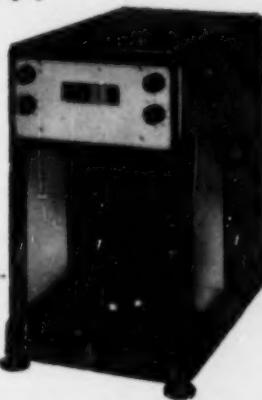
. . . weighs in one-third the time required by the usual balance.

Its control knobs are manipulated to select built-in weights. Corresponding figures appear on the direct reading scale.

Weights under 100 milligrams are indicated automatically.

The Gram-atic Balance weighs samples up to 200 grams and has constant sensitivity throughout this entire range.

For 115 and 230 volt 50-60 cycle A. C. . . . . \$895.00 each.



**Fast (20 second weighing)**

**Eliminates all weight handling**

**Beam under constant load**

**One-scale reading**

**Constant sensitivity**

**Weighs below 100 milligrams automatically**



Entire weight of sample is read on direct-reading indicator.

Headquarters for Laboratory Supplies

**FISHER SCIENTIFIC CO.**

215 Franklin St., Pittsburgh 19, Pa.  
1200 Locust St., St. Louis 31, Mo.



**EIMER AND AMEND**

100 Greenwich and Market Streets  
New York 14, New York

# *The* CHEMIST

Reg. U. S. Pat. Off.

*Publication of*

THE AMERICAN INSTITUTE OF CHEMISTS, INC.  
60 East 42nd Street, New York 17, N. Y.

---

Volume XXVII

April 1950

Number 4

---

*Editor: V. F. KIMBALL*

## *Editorial Advisory Board*

RAYMOND E. KIRK

HILTON IRA JONES

WALTER J. MURPHY

## *Contributing Editors*

R. K. Carleton, Boston College, Chestnut Hill, Mass.  
Leo M. Christensen, National Agrol Company, Lincoln 5, Nebraska.  
J. B. Ficklen, Health Department, C. L. A. 808 No. Spring St., Los Angeles 12, Calif.  
J. H. Jenson, Northern State Teachers College, Aberdeen, South Dakota.  
Louise Kelley, Goucher College, Baltimore, Maryland.  
Stewart J. Lloyd, University of Alabama, University, Alabama.  
Simon Mendelsohn, 608 E. Epworth, Winton Place, Cincinnati 32, Ohio.  
William B. O'Brien, The Dodge Chemical Company, Boston, Massachusetts.  
Ashley Rohey, 421 College Avenue, Salem, Virginia.  
Milton O. Schur, Ecusta Paper Corporation, Pisgah Forest, North Carolina.

## *Department Editors*

*Condensates*, Dr. Ed. F. Degering. *Local Chapter News*, C. P. Neidig.  
*Chemical Books Abroad*, Rudolph Seiden

---

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in *THE CHEMIST*.

Entered as second class matter April 8, 1936, at the Post Office at New York, N.Y., under Act of August 24, 1912. Issued monthly at 60 East 42nd Street, New York 17, N.Y. Subscription price, \$2.00 a year to members, \$3.00 to Non-Members. Single copy, this issue \$0.25. Copyright, 1950 by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

### SCHEDULED FOR EARLY ISSUES

Toxic Materials in Industry, by Dr. Lawrence T. Fairhall, F.A.I.C.  
The Increasing Responsibilities of the Chemist, by Ralph Lamenzo, F.A.I.C.  
The Chemistry of Intelligence, by Dr. Edward Podolsky  
An Employment Advisory Service, by Dr. W. L. Harber, F.A.I.C.  
Award of Honorary Membership to Dr. Gustavus J. Esselen, F.A.I.C.  
What the AIC Can Do for the Government Chemist, by Dr. J. David Reid, F.A.I.C.  
What the AIC Can Do for the Industrial Chemist, by Dr. Simon Miron, F.A.I.C.  
Chemists Over Forty-five, by Herbert F. Schwarz, F.A.I.C.  
Employment Contracts, John A. Dienner, F.A.I.C.  
Our Synthetic Dye and Pigment Industry Challenges the Chemist, by Dr. Hans Z. Lecher, F.A.I.C.

## IN THIS ISSUE

Twenty-seventh Annual Meeting Program	117
<i>Editorial, The Annual Meeting.</i>	
President L. H. Flett, AIC	121
Grandpa and the Looking Glass, Frank G. Breyer, Hon. AIC	123
Breyer—The Brave Individualist, Williams Haynes	132
Breyer—The Chemist, J. A. Singmaster	136
Export Control of Chemicals in 1949, L. N. Markwood, F.A.I.C.	140
Council	145
Local Chapter News	146
AIC Breakfast (A Report), Paul H. Horton, F.A.I.C.	148
For Your Library	149
Help	151
Condensates	152 & Inside back Cover
Professional Services	139 & Inside back Cover

### Cover Picture

Morris Katzman, F.A.I.C., is chairman of the Los Angeles Chapter, AIC. He came to Los Angeles from the Chicago Chapter, where for many years he was an active member and served as chairman of the Membership Committee and as delegate to the Chicago Technical Societies Council. He was an active member of the Electrochemical Society, and served as treasurer of the Chicago Section.

Shortly after his arrival in Los Angeles in 1946, he served as vice chairman and was active in several committees of the local Chapter, AIC.

Mr. Katzman was born in New York, N.Y., December 28, 1904. He received the Bachelor's degree from the University of Chicago. The University of Maryland conferred the degree of Master of Science in 1933. Further studies were taken during the following ten years at the University of Chicago and the Armour Institute. From 1933 to 1945, Mr. Katzman was employed as research and development chemist at the Emulsol Corporation in Chicago, when approximately one-hundred patents, American and foreign, were issued to him in the field of surface active agents, bactericides and food emulsifiers. He has published numerous papers in the field of bactericidal agents. After leaving Emulsol Corporation, he was instrumental in organizing Quincy Laboratories, Chicago.

Upon coming to Los Angeles, Mr. Katzman became research chemist and consultant to the detergent industries of Southern California, and in 1948 he organized the Process Chemicals Company. The Los Angeles Chapter felicitates him in his newest venture.

Chairman Katzman is also a member of the local chapters of the American Chemical Society, and the Institute of Food Technologists, and is becoming widely known for his activities in the chemical profession in this area.

Under his guidance, the Chapter is seeking to stimulate the younger chemists in the activities and objectives of the AIC. This he can ably do, since he has brought with him a vivid background of associations with his former mentors—Dr. B. R. Harris and Dr. Gustav Egloff.

# The Last Word in Purity

The unvarying purity of MERCK LABORATORY CHEMICALS is assured by one of the most advanced quality-control systems in existence. A few examples of the extensive Merck line of fine chemicals are shown below. Make these dependable "precision tools" work for you—specify Merck.

**The same  
high standard  
of purity for  
every batch**



**For best results  
be sure to  
specify Merck  
Laboratory  
Chemicals**

## MERCK LABORATORY CHEMICALS

MERCK & CO., INC. Manufacturing Chemists RAHWAY, N. J.

New York, N.Y. • Philadelphia, Pa. • St. Louis, Mo. • Chicago, Ill. • Elkhorn, Va. • Los Angeles, Calif.

In Canada: Merck & Co. Limited Montreal • Toronto • Valleyfield

# Twenty-Seventh Annual Meeting

The American Institute of Chemists, Inc.

Hotel New Yorker, New York, N. Y.

Thursday and Friday, May 11-12, 1950

The 1950 or Mid-Century meeting is directed to the advances in the field of chemistry which can be expected in the coming fifty years, based on present trends in research, education, and business. This theme will be discussed by outstanding leaders in the profession.

## PROGRAM

### Thursday, May 11th

8:45 a. m.	Council Breakfast (East Room) \$2.50
9:30	Council Meeting and Board of Directors Meeting (East Room)
9:30	Registration and Greetings. (Ballroom Foyer) Fee \$2.00. Non-members \$3.00
10:30-12:00	Annual Business Meeting. (North Ballroom) Committee Reports Election of Officers and Councilors New Business
12:00 Noon	Informal Luncheon (East Room). All invited. Tickets \$3.50
1:10- 5:00 p. m.	Concurrent Sessions

#### Concurrent Session A (North Ballroom)

Chairman: Dr. Norman A. Shepard, Chemical Director,  
American Cyanamid Company

1:10 p. m.	Introductory Remarks: Dr. Lincoln T. Work, Consulting Engineer
1:15	"Building Materials for the Future," Dr. Clifford F. Rassweiler, Vice President, Johns-Manville Corp.
1:45	"Trends in the Newer Metals," Alex Stewart, Director of Research, National Lead Company
2:15	"Alkalies and Heavy Chemicals," Dr. George F. Rugar, Manager, Product Development, Diamond Alkali Company

APRIL

THE CHEMIST

1950

2:45 "Looking Ahead in Pharmaceuticals," Dr. Randolph T. Major, Vice President, Merck and Company

3:15 "Food and Nutrition," John H. Nair, Assistant Director of Research, Continental Foods, Inc.

3:45 "The New Look in Cosmetics," Dr. Ralph L. Evans, President, Evans Research and Development Corp.

4:15 "Detergents of the Future," Dr. Arthur L. Fox, Director of Research and Development, Colgate-Palmolive-Peet Corp.

**Concurrent Session "B" (Panel Room)**

**Chairman:** Dr. Wayne E. Kuhn, Manager, Technical and Research Division, The Texas Company

1:10 p. m. Introductory Remarks: Dr. Wayne E. Kuhn

1:15 "Rubber Research—Past, Present, and the Goal," Norman C. Hill, The C. P. Hall Company

1:45 "Chemicals Used in the Manufacture of Rubber Goods," Dr. Albert A. Somerville, Vice President, R. T. Vanderbilt Co., Inc.

2:15 "Looking Ahead in Paper Chemistry," John B. Calkin, Chemical Consultant; Director, Department of Industrial Cooperation, University of Maine

2:45 "Paint Research at Mid-Century," Harry Burrell, Basic Development Laboratories, Finishes Division, Interchemical Corp.

3:15 "The Next Fifty Years in Plastics," Dr. Paul O. Powers, Technical Advisor, Battelle Memorial Institute

3:45 "The Use of Radioactive Materials in Research," Dr. B. S. Old, Arthur D. Little, Inc.

4:15 "Flavor," L. B. Sjostrom and Dr. S. E. Cairncross, Arthur D. Little, Inc.

---

5:30- 7:00 **Social Hour. (Parlor F). Cocktails. Sponsored by**  
John Wiley & Sons, Inc.

**Friday, May 12th**

8:00 a. m. **Chapter Officers' Breakfast.** (Parlor F). \$2.50. Chapter officers or representatives invited.

8:30 **Registration.** (Continued) (Ballroom Foyer).

9:15-11:00 **Continuation of Concurrent Sessions**

---

**Concurrent Session "A" (Continued) (North Ballroom)**

9:15 "Electrochemistry Today and Tomorrow," Dr. Robert M. Burns, Chemical Director, Bell Telephone Laboratories

9:45 "Photography, Image of the Future," Dr. Cary R. Wagner, Vice President, General Aniline and Film Corporation

10:15 "Milestones of the Mid-Century in Fertilizer Chemistry," Dr. Charles E. Waring, Vice President, Davison Chemical Company

---

**Concurrent Session "B" (Continued) (Panel Room)**

9:15 "Petrochemicals 1950 and 2000," Dr. Gustav Egloff, Director of Research, Universal Oil Products Company

9:45 "Developments in Liquid Fuels," W. M. Holaday, Director of Research Laboratories, Socony Vacuum Oil Company

10:15 "Today and Tomorrow in Solid Fuels Utilization," J. D. Clendenin, Coal Utilization Engineer, U. S. Bureau of Mines.

---

11:00-12:15 **General Session: "Two Methods for the Evaluation of Research Results,"** (North Ballroom)

**Chairman:** Dr. Lincoln T. Work, Consulting Engineer

Dr. E. H. Northey, Administrative Director, Stamford Research Laboratories, American Cyanamid Co. and

Edward Hartshorne, Director of Research and Development, Olin Industries, Inc.

---

12:15- 2:15 **Honor Recipients' Luncheon** (Parlor F). All invited to meet honor recipients. Tickets \$3.50

**Speaker:** Dr. Sidney Kirkpatrick, Editor "Chemical Engineering"; Vice President, McGraw Hill Book Company. "The Human Equation in Chemical Reactions."

APRIL

THE CHEMIST

1950

2:30- 4:45 p.m.	<b>General Session (Continued) (North Ballroom).</b> "Looking Ahead—The Presidential Viewpoint." Introductory Remarks: President Lawrence H. Flett, AIC Dr. Lauren B. Hitchcock, President, National Dairy Research Laboratories Herbert J. Woodman, President, Interchemical Corporation John E. McKeen, President, Charles Pfizer and Company, Inc. Dr. Arthur A. Hauck, President, University of Maine
5:30	<b>Reception in Honor of Dr. Walter J. Murphy.</b> (Parlor F). Tickets \$2.00.
7:00	<b>Medal Award Banquet.</b> (Grand Ballroom). Tickets \$6.50 <b>Invocation:</b> Rev. Joseph B. Muenzen, S. J. Depart- ment of Chemistry, Canisius College, Buffalo, N.Y. <b>Toastmaster:</b> John E. McKeen, President, Charles Pfizer and Company, Inc. <b>Speakers for the Medalist</b> Dr. Charles Allen Thomas, Executive Vice President, Monsanto Chemical Company Dr. Raymond E. Kirk, Head, Department of Chem- istry; Dean, Graduate School, Polytechnic Institute of Brooklyn <b>Presentation of Medal,</b> President Lawrence H. Flett, AIC. <b>Medal Address:</b> Dr. Walter J. Murphy.

Non-members are invited to register and to attend all sessions of the Annual Meeting on both Thursday, May 11th, and Friday, May 12th, and the Honor Recipients' Luncheon. Guests and Non-Members are invited to attend the Reception for Dr. Murphy and the Medal Presentation on Friday, May 12th.

Dress for the Medal Banquet is informal. Tables seat ten. Reservations for functions to be held at the Annual Meeting should be sent to Dr. Maurice J. Kelley, Arrangements Chairman, The American Institute of Chemists, 60 East 42nd Street, New York 17, N.Y. Reservations for hotel rooms should be sent directly to the Hotel New Yorker, 34th Street at 8th Avenue, New York 1, N.Y.

## EDITORIAL

# The Annual Meeting

## President Lawrence H. Flett, A.I.C.

THIS year's National Meeting of The American Institute of Chemists is the 1950 or Mid-Century Meeting. Dr. Lincoln T. Work, chairman of the Program Committee, assisted by Dr. Wayne E. Kuhn and Dr. Norman A. Shepard, has prepared a program in keeping with the time. The theme of the general sessions is the progress which can be expected in the different chemical fields over the next fifty years based on present trends.

The program is made up of outstanding leaders in different types of chemical industries. The Fellows of the Institute will be interested in the thoughts concerning their own field, and they will be particularly interested in the help which they may expect from other fields.

Thursday afternoon and early Friday there will be two concurrent sessions where these trends in research will be discussed by technical leaders. There is a joint session late Friday morning where the subject will be "Two Methods of Evaluating Research."

Friday afternoon we will have the thoughts of executives with respect to the coming half-century. The speakers will be: Dr. Lauren B. Hitchcock, president, National Dairy Research Laboratories; Mr. Herbert

J. Woodman, president, Interchemical Corporation; Mr. John E. McKeen, president, Charles Pfizer and Company, Inc.; who will represent industry; and Dr. Arthur A. Hauck, president, University of Maine, representing education.

After the general sessions Thursday afternoon, we will be the guests of John Wiley & Sons, Inc., for a cocktail party. Thursday evening is left free for those who wish to meet with their friends while visiting New York.

Another innovation this year is a breakfast Friday morning for all chapter officers and others who may be interested in chapter affairs.

On Friday noon there will be a luncheon where the members can meet those whom they have honored. This year's recipients will be asked to sit at the head table. Those attending should meet as many of our honor recipients as possible, introducing themselves where they are not known.

The evening of Friday, May 12th, there will be the Medal Banquet. The Gold Medal of the Institute will be presented this year to Dr. Walter J. Murphy, one of our outstanding Fellows. The reception preceding the dinner party this year is to be open to all at a fee intended to cover expenses.

## SCIENTIFIC LABORATORY FURNITURE EQUIPMENT

*Wood or Metal  
Catalogs Sent on Request*

Our Engineers are readily available to assist in planning layouts, estimates, etc., without cost or obligation.  
Address—

*Resource Mfg. Co.*

C. G. Campbell, President  
5057 S. Center St. Adrian, Mich.  
Representatives in Principal Cities

There are two major benefits from attending the Annual Meeting of the Institute: the first is an increased circle of friends, which is so essential to successful accomplishment; the second comes from stimulating lectures, which are always an inspiration to successful chemists.

It is the wish of the Council and of the officers that this year's meeting should be a very friendly affair, where everyone present will do his best to become acquainted with the other members of the Institute and with the guest speakers. A special greeting period has been arranged during the registration period. All

members are urged to attend this social period and to do their part to make it a success.

There have been several changes made in the Annual Meeting program this year. After this meeting is over, constructive comments from those attending will be most helpful in arranging future meetings.

### McClure Honored

Harry B. McClure, F.A.I.C., vice president, Technical Division, Carbide and Carbon Chemical Corp., received the first Honor Award of the Commercial Chemical Development Association, at its meeting held at the Roosevelt Hotel in New York, March 22nd. The award provides annual recognition of an individual who has made outstanding contributions to the field of commercial chemical development.

Sir Frederick Bain, Kt., M.C., deputy chairman of Imperial Chemical Industries, Ltd., spoke on "The Shape and Growth of the British Chemical Industry," at the February 17th meeting of the American Section, Society of Chemical Industry, in New York, N.Y. Dr. Robert C. Swain, F.A.I.C., Vice chairman of the American Section, presided.

Dr. Roger Adams, Hon. A.I.C., Head, Department of Chemistry, University of Illinois, is the new chairman of the Board of Directors of the American Chemical Society.

# Grandpa And The Looking Glass

Frank G. Breyer, Hon. AIC.

*Singmaster and Breyer, 420 Lexington Avenue, New York 17, N.Y.*

(Presented on the occasion of the award of Honorary AIC membership to Mr. Breyer, at a meeting of the New York Chapter, Feb. 15, 1950.)

YOU have cited me for humanity in chemistry. Everybody is for humanity in the abstract, particularly the politicians, who have almost preempted the field . . . You undoubtedly made this citation because you know how badly chemistry and all the physical sciences need more humanity. One way for us chemists to hold what we already have of humanity, and to build up more of it, is not to forget too easily when it was most in demand—and who responded and in what measure. You can only observe and know about humanity in action. It is psychic. It is too much of the moment to be really embodied in books or records.

Certainly there was more need for humanity than there was for new elements or new chemical reactions in the dark years between 1929 and 1935. As in all the critical affairs of men, the crisis was upon us, chemists and chemical engineers, before we knew it, and we fumbled and tripped over our own feet for over two years before we got a team together capable of coping in some measure at least with the tragic situation in which

hundreds of chemists and chemical engineers found themselves almost overnight. They all came to New York as soon as they lost their jobs. (New York is the center of chemical employment.)

The story of the Committee on Unemployment and Relief for Chemists and Chemical Engineers, and its successor, the less pointedly named "Chemist Advisory Council" is much too long here. I only want to record for the refreshment of the memories of the older men (it is twenty years ago now) and for the benefit of those who have yet to go through such a crisis, the names of the men who asked no questions as to why chemists were in trouble and in need; what chemists were in trouble and need; and who was responsible. All they asked was: "How can we help?"

I learned many lessons then, and you younger men will learn too, when your time of crisis comes, about the fallibility of organizations be they political, economic, scientific, business, or social. Invariably they deny the existence of an unpleasant state



### Frank G. Breyer

of affairs. When that position becomes untenable because of the realities, they move to the somewhat more comfortable one that "this organization is not responsible, and there is

nothing we can do about the situation anyway."

By the time the more understanding and psychic members of an organization have, as individuals, really

## GRANDPA AND THE LOOKING GLASS

got something going in the way of alleviation for a bad situation, the organization as such finally gets to work and does not do too bad a job. The record of some of our scientific and technical societies was rather sad between 1929 and 1931. The force behind much of the demand now by employees of corporations for security and even a voice in company affairs stems from the considerable failure then of many corporations to act promptly and humanely in that crisis. Organization structure and orthodoxy, legal abracadabra, and group inertia made it difficult for some of our own chemical groups, for example, to act other than in a negative fashion for over two years. They all got together and pitched when it was evident that the trouble was hitting everybody; that it was inescapable, and that nobody was really exempt—but a lot of careers were permanently ruined by that time, and some men were dead.

### The Importance of the Individual

That experience taught me that the individual is not only the historical basis of society, he is the sound and proven reliance in crisis. He can act quickly and decisively on his own initiative. Any government, any organization, or any group that effaces the individual needs no external enemy. It is already infected with the virus of its own destruction. Effaced, frustrated, regimented men are little men. Remember what Kipling said

in *Puck of Pook's Hill* about the little men of the scrubby hills of the north of England, the little Picts that the Romans with their wall and all their legions and phalanxes couldn't conquer or keep out of their conquered England. Said Kipling in his rhyme about the Picts, "We are the Little Folk, we! Too little to love or to hate. Leave us alone and you'll see how we can drag down the Great!" Any organization, good or bad, has some great men in it. But if there are too many little men, they will surely pull down the great. Beware of anything that makes little men who cannot act except through an organization.

I name you, Mr. Haynes, some individuals for the human side of chemical history: George Lewis, Walter Landis, Fred Beckett, Howard Neiman, George Hasslacher and his family, David Wesson, Leo Baekeland, and William Buffum—all of whom have passed on. I am happy that we still have with us A. Cressy Morrison, Marston T. Bogert, Walter Schmidt, Robert Baldwin, Lammot du Pont, Harold Urey, William T. Read, Gustavus Esselen, Edward Weidlein, and M. R. Bhagwat. There are many more, hundreds more; steady contributors in small amounts, in our records, but this group were our "ever-present help in time of trouble." Those of us who were at the center of that storm want to forget it, but we cannot forget its les-

sons. You coming generation will have to solve your own crisis in your own way when it comes. You will do it better than we because of our example. Keep a sharp eye ahead, the next trouble won't be like the last. Many people will not recognize it and more will not admit it when it does come.

### To the Profession

I have a second duty to perform, that to the profession of chemistry. I am enjoying my profession immensely. I enjoy the people in it. I am sure it is a good profession. Why shouldn't I be! I, a boy who had to sell newspapers on the streets of Baltimore to clothe myself through grade and high school; who had to work every summer running a poolroom and bar at Ocean City, Maryland, to save for winter expenses in college; who was married in a borrowed suit, could not pay the minister his customary fee, and went to New York in a day-coach on a \$35.00 total budget honeymoon! Today, I lunch with the other opulent chemists at The Chemists' Club at \$1.70 plus taxes and the other extras. I ride in Pullman cars, and occasionally spend \$35.00 in one night on a good prospect.

If you think this was a good go for a poor boy of my generation, with the opportunities limited to selling water of crystallization as a chemical; nine-tenths of a barrel of air for a barrel of zinc oxide; ground

rock and water in paint; what about you men of the profession of today and tomorrow. You have cosmetics at \$1.00 an ounce, vitamins at \$5.00 a bottle, hormones even higher, and now all the possibilities of transmuting the elements! How I would like to be a young chemist today with that vast harvest to be gleaned! I hope your professors gave you a few courses in imaginative chemistry, as well as in the real arts of twisting the molecule's tail.

I am prepared to attest, after forty years of experience up hill and down, that the profession of chemist and chemical engineer is an honorable one, a worthy one, and a growing one. It is not overcrowded at the top, and it definitely needs men who are masters of psychology as well as of fact. Its great weakness is its excessive attachment and worship of the laboratory, the artificially controlled environment.

Chemistry goes ahead on the drafting board, in the factory, and in the sales and executive office as well as in the laboratory. Many of our most incisive findings in the sciences and technology have resulted from mass utilization or mass application which can only be had when there is mass production and mass distribution. Laboratory production and test distribution in many cases are indicative but not determinative.

The chemist has walked out of the laboratory more often in my times

## GRANDPA AND THE LOOKING GLASS

than he used to. He should get more of the fresh and stimulating air of the uncontrolled and unpredictable environment of the plant and the sales office, and not live too much in the artificially controlled environment of the laboratory.

While chemistry is an attractive profession, I honestly did not choose it myself, any more than I chose to go to college, or specifically to the Johns Hopkins University. They chose me. Why? Because I was a good lacrosse player and held the inter-scholastic mile and cross-country championship of Maryland. The great Johns Hopkins University (in 1905, it was *the* great university, the university of Gilman, Remsen, Brooks, Roland, Paul Haupt, Simon Newcomb and Gildersleeve, not to mention the four physicians, Welch, Kelley, Halstead, and Osler—Johns Hopkins, the serious school of oriental seminars, debating societies and chess players) had one weakness in its intellectual armor. Johns Hopkins openly and ardently loved lacrosse. This wayward love was ardent enough to want intercollegiate championship teams in lacrosse, and some of its great minds were willing to grant scholarships to worthy young men who happened to be lacrosse players of promise. I remember vividly the day Charles Meyer, captain of the Hopkins' lacrosse team (afterward professor of physics at Michigan) met me at the old Maryland

Oval where we high school boys used to train, told me I could go to Johns Hopkins for nothing if I could feed and clothe myself. My long widowed mother, bless her soul, interposed no objection. So I went to Johns Hopkins to play lacrosse and run on the track team. Whatever else I was to do there besides making some money on the side by writing college news for the daily papers was purely incidental. This was a variant on the usual "boy goes to college to have a good time." I went to play lacrosse, and did not change my objective till I began to court Marjorie Baker, whose father was in the chemical business. Why did I specialize in chemistry? Now you know one reason. Williams Haynes has told you another, that stray book on Natural Philosophy that got into our house in some unknown way. Equally powerful, perhaps, was the fact that good old Dr. Renouf, head of the undergraduate Department of Chemistry, was a great lacrosse fan and at the same time principal faculty member of the Athletic Association. He somehow managed to make me a good-enough chemist so that I could keep on getting scholarships.

My next duty is to my friends. I have thought long and deeply. What should I say to them? . . . So I went to the library, where all good chemists go when in a quandary. There I found that everything that could be said in a speech has already been said.

Why not use some of the originals? That would be my greatest teacher,—Remson's—approach.

Who are you? For my purposes, you are the "doing generation, thirty to fifty; the passing generation fifty-plus, and the younger generation under thirty.

### To the Passing Generation

First, to my own generation, the fifty-plusers: My investigations of originals addressed to older people reveal that there is more unanimity in what is addressed to us than to any of the other age groups. The first admonition always comes out: "Old man, don't make a fool of yourself." The more common expression, "There is no fool like an old fool." Number 2 admonition, I can condense best as follows: Quoting the "doing" generation, men of forty: "Yes, we know all that, but that was yesterday. That was your show. We want to run our show this better way. Won't you please shut up?" Number 3 is really corollary to number 2, "Old fellow, if you want to do something, go back to man's first civilized occupation—be a farmer, curse the bugs and damn the weeds. The new-fangled fertilizers and insecticides are ruining the soil and devitalizing the food. You can write a book if you want to (one more book won't hurt) proving beyond doubt that farming is not what it used to be."

In choosing my preferred original for the passing generation, I am guided by what the newspapers quote

older men as saying. (By newspapers, I mean not only those of New York and the United States, but those of India, the Argentine, Peru, Canada, and Britain). It is invariably to the effect that they do not think the world is going to be a good place for their grandchildren.

Further that their Government is pretty much of a mess. If the passing generation is of that mind, I am afraid that my library researches did not turn up much that I can cheer it with. My *Thesaurus of Epigrams*, from Catallus to Will Durant, gives nothing to refute your pessimism. The only ray of light was two uncredited quotes: "Almost any system of government will work if the people will." That seems to put the question up pretty squarely to the people, but the record shows that the people never vote to work (they always vote for doles). The other one goes: "One thing is inevitable—if the government continues to fall down, the people will rise." This does not cheer me, because the government actually has to fall down before the people arise, and the lawyers tell us that a government that has fallen down is anarchy. In essence, we have to go through anarchy, but to rise, fall, and go through anarchy again. I leave my *Thesaurus* and go to my philosopher of last resort.

Speaking of government, what does Voltaire (who could put all the

## GRANDPA AND THE LOOKING GLASS

vitamins of a whole book into one sentence) say about government? Here it is: "Speaking of government, does not its art lie in taking as much money as possible from one group of citizens to give it to another?" I turn despairingly to another chapter. Speaking of Greek government, that admirable republic of which we are so often reminded, Voltaire says: "No doubt the Greeks preferred the government of Pericles and Demosthenes to that of the Turkish pashas, but in their most prosperous and palmy days they were always complaining; while they gave laws to the old Romans, their own were so bad that they were continually changing them."

Even in Cicero's *De Senectute* (Essay on Old Age), I find him in the dumps about government too. In the opening paragraph of his address to Titus Pomponius Atticus, he says, "I have reason to believe that the present unpleasing posture of public affairs sometimes interrupts your tranquility of mind; as it frequently, I confess, discomposes my own." After that, Cicero never once really bemoans anything. He tells us how to avoid being foolish old men, how to be good farmers, and yes, even as Solon did "he (Cicero) learned something in his old age every day he lived."

I commend this "original" talk to us, the passing generation. It said, roughly two thousand years ago, about all there is worth saying to people like us. I use one of my heroes of

today to illustrate the enduring virtue of my original. He is Owen D. Young, who has retired to his farm at Van Hornesville, N.Y. He will not be dragged into this generation's affairs. To *Life's* reporters on his seventy-fifth birthday he said, "For my part, I don't much relish the role of elder statesman. I have often said that a man's career resembles a water wheel on which the leverage of each bucket increases, reaches a maximum and then diminishes as the wheel turns. In line with that, I suspect that a man can be of maximum use only to his own generation. After he has passed the peak of his own participation in affairs, he must see things from a less applicable, and hence a less valid, point of view than that of the men who are directly concerned. It may be of course, that all that is merely an argument which I use to quiet my conscience when it accuses me of being lazy. But I really believe that more harm is done by old men who cling to their influence than any young men who anticipate it." I have read everything that Owen D. Young ever said, and I admire him above all other living men for his healthy and sane attitude toward the declining years.

### To the Doing Generation

Now for an original for the thirty-to-fifty class, the "doers" of today, not the counsellors. Strangely, I go back only to February, 1935, for an "original" for you. It is "Newton on

Blackstone," a response given by our foremost bibliophile, A. Edward Newton of Philadelphia. He gave this talk when he received the honorary degree of Learned Doctor of Laws at the University of Pennsylvania. A more perfect picture of the character of human institutions was never made in so few words. That the particular human institution delineated is the law is a mere happenstance. It could just as easily be medicine or engineering. However, the law is the very symbol of civilization. One definition of civilization is that it is "the reign of law." You thirty-to-fifty boys, cocksure and certain, are those who need to have the mirror of life and experience held up to you once in a while. You are running human organizations, the professions, the businesses, and the societies of today. But all these are as full of human frailty as when Puck first said: "What fools these mortals be!" Now Newton is a fifty-pluser, and he cannot get down to his subject, the law, without taking a crack at things as they are. I quote: "I have recently been reading old Montaigne. The French essayist died in 1592. Shakespeare had not then written his greatest plays, yet Montaigne was complaining that the world had seen its best days, that things were not as they used to be; and he believed it, too, for an honest man than Montaigne never lived. The English have a comic weekly, *Punch*—it has

been functioning now for almost a hundred years; someone said, long ago, that it is not as good as it used to be—to be met by the rejoinder that it never was." (You can't stop these old fellows from moaning.)

Newton quotes Gibbon as his first authority on the law: "Gibbon, who in a few terse words summed up all history as a register of the crimes, follies, and misfortunes of mankind, was equally exact in describing the law: he called it a mysterious science and a profitable trade." Did someone say that Gibbon was not talking about the law, but chemistry, "a mysterious science and a profitable trade?" About the lawyer, says Newton, "The guild which has held its power with the greatest skill and tenacity is that of the lawyer. The functions of other practitioners cease with their deaths, but by the power of mortmain the lawyer is enabled to perpetuate his grasp upon another's property and to continue the collection of fees and the distribution of costs until nothing is left. So dazzling are the operations of the law that one can scarcely bear to look upon them with the naked eye."

Here is our model for the chemists! But we are not so far behind them at that, with our hormones and other prenatal drugs on the one hand and our embalming chemicals on the other.

I leave you, the "doing" generation, with Newton on Blackstone. It

## GRANDPA AND THE LOOKING GLASS

is difficult to get a copy of this original; there were only 2,000 printed by the *Atlantic Monthly*, of which I fortunately have several signed copies left. I have sent many to my legal friends in lieu of a mirror.

With respect to your human institutions, not just the law—remember, to the rest of us you sing the same song as did England's most enduring Lord Chancellor: "The law is the true embodiment of everything that's excellent; it has no kind of fault or flaw, and I, my Lud, embody the law." You men out there, even though you embody chemistry, "which is everything that is excellent," you are just some more characters on the stage of history. Take a look in the glass occasionally. It will do you good. You chemists are mostly too solemn.

### To the Younger Generation

Now to the last age group—you thirty-years-minus people: I have saved the best original for you, and it is not an old one either. I commend you J. M. Barrie's Rectorial Address, "Courage," delivered at St. Andrews University, Scotland, May 3, 1922. To me it is a perfect thing on the subject of "courage," than which "There is nothing much else worth speaking about to undergraduates or graduates or white-haired men and women. It is the lovely virtue—the rib of Himself that God sent down to His children." Delivered between the two wars, that

address must positively have had an effect upon "those few who did so much for so many." It must have been determinative for many an Englishman and Scotsman in that epic and heroic battle for Britain . . . Listen to what the man, who has been described as playing hide-and-seek with angels, said, "doubt all your betters who would deny you that right of partnership. Begin by doubting all such in high places—except, of course, your professors. But doubt all other professors—yet not conceitedly, as some do, with their noses in the air; avoid all such physical risks. If it necessitates your pushing some of us out of our places, still push; you will find it needs some shoving. But the things *courage can do!* The things that even incompetence can do if it works with singleness of purpose!" What a true and timely statement Barrie makes about us, your betters in age; "We are nice and kindly people, but it is already evident that we are stealing back into the old grooves, seeking cushions for our old bones, rather than attempting to build up a fairer future. That is what *we* mean when *we* say that the country is settling down. Make haste, or you will become like us, with only the thing we proudly call experience to add to your stock, a poor exchange for the generous feelings that time will take away. We have no intention of giving you your share. Look around and see how

much share Youth has now that the war is over. You got a handsome share while it lasted."

No one better than Barrie knows the many aspects of courage. It takes a mind that sees puppets as well as men to show the ever present need of courage.

What wonderful advice for a young man is the following:

"Hanker not too much after worldly prosperity—that corpulent cigar; if you became a millionaire you would probably go swimming around for more like a diseased goldfish. Look to it that what you are doing is not merely toddling to a competency. Perhaps that must be your fate, but fight it and then, though you fail, you may still be among the elect of whom we have spoken. Many a grave man has had to come to it at last."

And for myself and others who went to college for every reason but

learning, we can seek absolution for our sins at no better source than Barrie addressing the red gowns of St. Andrews, with many a potential Bobby Burns among them. He disagrees with a man who said, "Happy is he who can leave college with an unreproaching conscience and unsullied heart." Says Barrie, "I don't know about that one; he sounds to me like a sloppy, watery sort of fellow; happy, perhaps, but if there be red blood in him, impossible." Be not disheartened by ideals of perfection which can be achieved only by those who run away. Nature, that "thrifty goddess," never gave you "the smallest scruple of her excellence" for that. No and she never will to those who run away—never. Have courage to be an individual, don't "toddle to security"; have courage to be yourselves, not little men who "pull down the great."

## Breyer—The Brave Individualist

Williams Haynes

*Author, Stonington, Connecticut*

(Excerpts from an address given on the occasion of the award of Honorary AIC membership to Frank G. Breyer, F.A.I.C.)

THE wise men—prophets, philosophers, poets—have repeatedly warned us against flattery. "The food of fools" they have called it; "the slayer of the soul," "the serpent's tongue," "the handmaiden of vice," "the puff mistook for fame," and they have heaped a corresponding

odium upon all flatterers. I am resolved to have no truck with flattery. I pledge you to speak the truth . . .

One of the most damaging things that can be brought up against Frank Breyer is that he taught me most of the chemistry that I know . . . The first chemical laboratory I ever step-

## BREYER—THE BRAVE INDIVIDUALIST

ped into was presided over by Frank Breyer. According to modern lights, it was not much of a laboratory—dark, dingy, equipped with primitive apparatus, all in a great Victorian, brick and brownstone tomb of a building. But that freshman laboratory was the threshold to what was the first real school of chemistry in America—Johns Hopkins University—where chemistry was taught as a pure science with a capital "S".

In these days of engineering courses and orientation courses, of courses in chemical economics and marketing research, that sounds very old-fashioned. At least we learned chemistry, and of the eleven callow freshmen that entered that laboratory under the watchful eye of Frank Breyer, two of them are today vice-presidents of great petroleum companies; two are professors in chemistry; one is a distinguished pharmaceutical chemist; two others also owe their place in *Who's Who* at least in part to chemistry . . .

In those days "Dutch" Breyer was regarded by all undergraduates with admiration and affection. It was a wonderful feeling, that youthful hero-worship of ours . . . Then we were freshmen and he was a senior: and what a senior! Captain of the track team, and what at Hopkins in those days was more important, a star of the lacrosse team. Lacrosse was and still is the Hopkins game. He was the high-scoring man

of the famous Hoskies system of attack. He bore these high honors lightly, for he was inherently modest, unassuming, friendly with all. In the laboratory he was patient with us beginners, understanding and helpful. One day I went to him with a problem.

"Dutch," I said, "where do I get some sodium agitate?"

"Sodium what?" he exclaimed in astonishment.

"Sodium agitate. I need it in this experiment and I can't find it in stock."

"What the devil are you up to now?"

So I showed him the laboratory manual and pointed out the directions: "add sodium chlorate and agitate."

Then and there Frank Breyer taught me one of the most valuable lessons that I ever learned. When you are writing chemistry for the teen-ager or the banker or the great American public, you've got to be mighty careful how you use technical terms . . .

All of you have noticed that scar on Breyer's face, and many have wondered how he came by it. I have heard some exceedingly apocryphal accounts of that wound mark . . . But that scar is not the souvenir of a hard-fought lacrosse game. It is not the proud memento of a well-fought slagger duel. It is the brand mark of gangsterism!

Frank Breyer was born in Baltimore. His parents were German emigrants and his father, a political refugee from Prussianism, kept a small grocery and delicatessen. Frank was raised on pigs' knuckles, liverwurst, beer, and liberal ideas—all of which explains a great deal.

The Breyers did not live in a fashionable neighborhood . . . In those good old days, the youths of Baltimore were all split into gangs, not ordinary groups of adolescent hoodlums, but well organized fighting bands which had grown up out of intense rivalry of the ancient fire companies. If you are interested, read Henry Mencken's book about the boy gangs of Baltimore; the Mencken who wrote *Prejudices* and those three wonderful volumes on the American language. He was born in Baltimore just about that time, the son too, of German emigrants, in almost exactly the same environment from which our distinguished guest has come.

Frank belonged to a gang. You were born into one. He belonged to the Hopkies, rivals of the Rock Streeters and the Myrtle Squadron and the Bull Cocks, each of which ruled its own territory with an iron hand. It was no more healthy to be caught in another gang's bailiwick than it is for an American soldier to be found roaming around in the Soviet zone of Berlin.

One winter's evening, returning from coasting with their girls on a

hill in enemy territory, Frank, who was about seventeen, and a pal were beset by three members of a rival gang. They were older and bigger and began bullying. It was a case of run or fight. You know which he chose, and he opened hostilities by knocking out one of the trio. Then he squared off with the biggest and they went at it, blow for blow, while his pal stood by crying, "Oh boys, let's not fight, don't fight!" From that moment Frank Breyer has had no use for any pacifist of any breed in any walk of life.

He noticed that he was bleeding terribly, but he fought on and through, and only then did he discover that his opponent had been slashing him with a razor . . .

They hurried him to the family doctor, a good old German who turned the lad upside down with his head low, lest he faint, and went to work with a needle and two feet of suture, sewing up that gashed cheek. They did not pamper youngsters in those days.

Breyer's father died when he was still in school, so through high school he sold newspapers, organizing other boys to work for him, in order to buy his clothes. At Johns Hopkins he wrote college news for the Baltimore newspapers; and the summer of his freshman year he got his first job as clerk and cashier at the Pagoda, at the summer resort at Ocean City, Maryland. They had a topflight bar-

## BREYER—THE BRAVE INDIVIDUALIST

tender at the Pagoda, but when he got drunk, which was pretty regularly, young Breyer had to step in behind the bar . . .

The second summer at Ocean City he went in business for himself. He leased the pool-tables and the bowling alleys and on the side wrote seashore news for the Baltimore papers. Among the summer residents at Ocean City was the family of Henry Baker, formerly right hand man of the old Kalbfleisch firm and at that time president of Davison Chemical Company. Frank fell in love with the Baker daughter, Marjorie, and enlisted her two brothers as assistants in his news agency. The same facts, rewritten, went to all three of the Baltimore newspapers. There is a good chemist's instinct—working up a by-product into a salable product!

How did Breyer become interested in chemistry? In a perfectly orthodox way: by reading a book. It was one of those encyclopedic collections of craftsmen's recipes that he found in his father's library, and his first chemical venture was an utterly unsuccessful attempt to electroplate the family silverware. In high school he was attracted to chemistry, chiefly because of the splendid opportunity that it offered to create charming stinks. At Johns Hopkins, his faculty advisor, not in the formal sense of today, but a close, friendly relation based upon the older man's interest in a promising youth who was a great lacrosse player—

was Professor Renouf, a great teacher of chemistry. And when Frank fell in love with a chemical manufacturer's daughter, his fate was sealed. They were married during Christmas vacation of the year he got the Master's degree. He just simply had to go to work.

I admire this ex-gangster tremendously. First and foremost, I admire him for his courage, not only for that physical courage that takes on odds of three to one with a clenched razor in its hand; not only for courage of the heart that enabled him to plod along yard after yard until at the finish line he turned in a new mile interscholastic record; not only for courage of the head that made it possible for him to leave a \$17,000-a-year job with bonuses and strike out for himself. But I admire most of all the courage of his spirit, the kind of courage it takes to stand up against powerful organizations, great business corporations, and a strong association of his own professional contemporaries, and in spite of their opposition, do what he believes is right. It is a brand of courage that gives honest but unwelcome advice to an influential client, the courage that stands firm by a cause that is unpopular or a man who is friendless.

Frank Breyer is courageous to the core and it follows inevitably and irrevocably that he is a man who walks boldly upon his own feet. Because he is a rugged individualist, he

realizes that the human being is vastly more important than any organization, be it a corporation, or a trade organization, or a government. We need men like that today, men who think honestly and independently; men who are loyal to their friends and to the ideals; men who are sincere in thought, word, and deed.

Have you noticed how frequently a great writer expresses so much

more aptly, so much more clearly than you possibly could, your own thoughts and feelings? Shakespeare wrote these lines for Hotspur in the First Part of Henry IV, but also he wrote them for me:

"By God, I cannot flatter; I defy  
The tongues of soothsers; but a  
braver place  
In my heart's love has no man than  
yourself."

## Breyer—The Chemist

### J. A. Singmaster

*Singmaster and Breyer*

(Presented on the occasion of the Award of Honorary AIC membership to Frank G. Breyer.)

MY ACQUAINTANCE with Frank began in 1910. At that time I was chief of the Chemical Division of the New Jersey Zinc Company, Palmerton, Pa., and had charge of the laboratory as well as the lithopone and sulfuric acid work. We were in continuous arguments with the mines and other smelters on the determination of the zinc content of our ores—not only as regards the price determination but also with respect to the recoveries obtained in the treatment of these ores. I felt that we had to have a standard method for the determination of zinc which would be accepted by all of the company units, and I was determined to find someone to investigate the subject. I wrote to Johns Hop-

kins about our needs, and the next thing I knew Frank Breyer came up to see me.

He was engaged and made a careful investigation of all the methods for determining zinc. One of his problems was to convince our chief chemist that he really knew what he was doing. His results on samples were right on the dot, and from then on his work was accepted and he presently became the head of the laboratory.

The production of pigments was the principal money maker of the plant and the study of the principal pigment, zinc oxide, interested Frank. He found that the doctor of our hospital had an oil-immersion microscope, and for the first time showed

## BREYER — THE CHEMIST

me the true particulate form of our zinc oxide pigment, namely, the fact that it was built up of crystals and was not an amorphous aggregate like popcorn. This investigation of Frank's led to an appreciation of the effects of surface in the compounding arts, especially the manufacture of paint and rubber, which took by far the greater part of our product.

Obvious as the answer now seems, we had plenty of "doubting Thomases" to convince in the company itself. In fact the acceptance of Frank's findings was quicker by many of our customers.

The pigment business, our principal concern at that time, is reflected in about a dozen of Frank's patents which grew out of this work. The contributions of our laboratory to the expansion of the company's business became increasingly important, and our organization was enlarged to the point where a separate Research Department was established in 1917, and one of the first large research laboratories in this country was built in 1919 to carry on this work.

Frank's talents as a leader and organizer were increasingly called upon to handle the growing ramifications of this work. He was able to select and train men already in our organization for the most diverse functions. How well I remember his discovery that Henry Green, who came to us as a cement chemist, was an enthusiastic microscopist. His contributions

to this science and its applications to pigment work are well known.

The company was interested in the manufacture of lithopone in addition to zinc oxide. This pigment had the undesirable property of turning dark in sunlight. Careful research showed that the control of the chlorine content not only made it light-resistant, but did not interfere objectionably with its paint-making properties. This, together with methods of muffling, were the subjects of another group of patents. The result was that the Zinc Company jumped from one of the "also rans" to first place in the race for lithopone sales.

The New Jersey Zinc Company occupied a peculiar position in the production of high grade zinc in that the ores at Franklin Furnace were very low in zinc and cadmium. High grade zinc was, however, either a feast or a famine. When wars were in the offing or in progress, there was a heavy demand for this zinc for the manufacture of cartridge brass, and our sales were large. At other times the pure metal was debased with lead, stocks were accumulated, and at times furnaces were shut down. Research was carried on looking to new uses for high grade zinc, with the discovery of die-casting alloys requiring an ultra-pure metal. While the patents on this subject do not bear Mr. Breyer's name, they were a result of the team work of the or-

ganization of which he was the moving spirit and the spark plug.

Another group of inventions in which Mr. Breyer participated in a major degree involved labor-saving improvements in both the manufacture of the zinc oxide and the metallic zinc or spelter. The first of these to come to fruition was the mechanical furnace for manufacturing zinc oxide. This not only reduced the labor to a minimum, but increased the quality of the product to such a degree that premium grade oxide could be made from our poorest grade ores—something unheard of. It also brought about a much increased recovery and made the attendance of the furnaces a simple matter instead of a back-breaking job in a dusty and hot atmosphere.

The manufacture of spelter in the old-fashioned horizontal retort, with a production of about fifty pounds per retort per day, was another costly operation involving work in high temperatures and a dusty atmosphere. Again our teamwork resulted in mechanizing to a large degree the manufacture of spelter in the continuous vertical retort, with a production of 10,000 to 12,000 pounds per day from one retort, contrasted with fifty pounds of the previous art, and with recoveries in the 90's.

In 1927, I became convinced that I would be happier and have greater opportunities outside of the Zinc Company organization. I told Frank

my plans and suggested that he could become my successor as general manager of the Technical Department of the Zinc Company. I will never forget my gratification when, notwithstanding this suggestion and his talks with officers of the company, Frank decided to join me in the consulting business.

We started in business in the Spring of that year. Our position in the zinc industry was such that we have been consulted on zinc problems by practically all of the leading producers of zinc, not only in this country but abroad. Our scope of endeavor has been much widened, due in large measure to Frank's wide acquaintance and his friendship with chemists the world over.

The volume of work which has come to Singmaster & Breyer has been so great that we have kept an organization of about one-hundred people busy. During the war we were the engineers for the construction of three magnesium plants in the United States and one in Canada. Our interests have run from rayon delustering to hot-ink printing, from the recovery of tin from low grade ores in Bolivia to the manufacture of synthetic ammonia using wood gas in India. We have had a number of interesting jobs in connection with the Atomic Energy Commission. We have been called upon for expert assistance in a great variety of metallurgical fields—cobalt, cadmium,

## BREYER — THE CHEMIST

germanium, magnesium, nickel, zinc, and uranium, to mention some. In much of our work we have been interested in the removal of fine particulate matter from gases. This knowledge has been particularly valuable now that the deleterious effects of such impurities on health is being recognized.

I never knew anyone whose energy and enthusiasm were as great as Frank Breyer's once his interest is aroused. This driving force has been one of his principal assets both in accomplishing the results desired, and in making friends with everyone—be it the ordinary, foreign workman or the high-class specialist.

### Sponsored Industrial Research



Chicago, Ill. 13791 S. Ave. "O"  
Madison, Wis. 323 W. Gorham St.  
New York, N. Y. 50 E. 41st St.

### Chemical Translations

by mail

Werner Jacobson, B.S., M.S., M.A.I.C.

### Translator

German, French, Spanish, Portuguese,  
Italian, Swedish, Russian, Chinese

334 South Mozart Street Chicago 12, Illinois

## Chemist Available Executive-Chemist Ph.D.

Successful in administration, research, development, production, sales-advertising liaison. Ethical, proprietary pharmaceuticals, chemicals. Presently vice president, medium-sized organization. Seeks administrative or technical position in chemical, pharmaceutical or related fields, with or without investment. Phi Beta Kappa, Sigma Xi, F.A.I.C.; many publications, patents. Married; location immaterial; available reasonable time. Salary high, but justified. Please reply to Box No. 40, THE CHEMIST.

## Available

Amorphous Boron  
Boron Nitride  
Phosphorous Nitride  
Silicon Nitride  
Manganese Oxide  
Aluminum Oxide (beta)  
Cupric Dichromate (crystal)  
Tetranitromethane

JOHNSON & SCUDDER

92 ORCHARD STREET  
Bloomfield, N. J.



## R. S. ARIES & Associates

Chemical Engineers  
And Economists

### COMMERCIAL CHEMICAL DEVELOPMENT

Process Analysis • Market Research  
Surveys — Technical & Economic  
Evaluations • Application Research  
Product Development

26 Court Street, Brooklyn 2, N. Y.  
MAin 4-0947

# Export Control of Chemicals in 1949

L. N. Markwood, F.A.I.C.

*Chemical Branch, Office of International Trade, U.S. Dept. of Commerce*

FOUR years of combat warfare and five years of postwar conditions have left a deep impress upon the export-trade pattern of the United States. Of necessity, during the war, exports were restricted (1) to conserve the limited supply of commodities and (2) to channel them into friendly and away from unfriendly hands. Then, with the immediate postwar years and the release of tremendous buying demand from every quarter of the world, the United States found itself obliged to continue the restraint on outgo of goods in order to protect domestic consumers and help in throttling inflation. The wartime Positive List, designating commodities which required a license for export shipment, was kept alive, subject to revisions following changes in the supply situation. That period has passed and we now have in its place the problem of limiting exports for reasons of national security.

Aware of the dominant position of the United States as the world's outstanding supplier of goods, the Government recognized the importance of exercising controls over materials and equipment of strategic value.

This national policy began to be implemented in early 1948 and brought about the screening of all exports destined to Europe and adjacent areas. The procedure adopted required that shipment of anything from toys to goods of war potential could be made only upon application to the Office of International Trade, U.S. Department of Commerce, for a validated license—whenever a European consignee was involved. This procedure was soon modified to exempt from the special license requirement goods regarded as non-strategic and in ample supply. Items of this character came to be identified on a special list—GRO List (the symbol for general license to European and other countries). The policy of 1948 also continued world-wide control (except toward Canada) over goods in short supply, these comprising the bulk of items on the Positive List of that year.

This article deals primarily with chemicals—an important field in export trade and one posing serious problems both during the period of short supply and in the period of security control. The handling of these problems requires the chemist's

## EXPORT CONTROL OF CHEMICALS . . .

professional background and experience in knowing the materials dealt with, particularly their uses, derivatives, raw materials required, and dependence on foreign sources.

### Positive List

The Positive List of October 1, 1948 (See *Comprehensive Export Schedule No. 26*) contained 91 chemical entries. The list of March 31, 1949 (*Comprehensive Export Schedule No. 27*) had 83. Most of these items owed their inclusion in the Lists to the tight supply situation.

A new Positive List, considerably revised, was issued Aug. 12, 1949 (*Current Export Bulletin No. 540*). In this the number of chemical items jumped to 293, reflecting the transition to and emphasis placed upon the security phase of export control. Several revisions of the list of Aug. 12, 1949, have taken place, resulting on Dec. 31, in 252 chemical entries.

In the initial stages of security licensing the public knew little of the whys and wherefores of the Government's actions in processing export applications. However, the exporting fraternity gradually came to understand that the terse comment "Not in the national interest" covered a carefully-planned design in the pattern of allowable exports.

Examination of the chemicals on the Positive List generally will reveal to anyone acquainted with their uses the reason for controlling their exportation. In practically all cases, the

observer will note a connection with military goods, sometimes direct but often of indirect association. The reason for including many chemicals that seem remotely related to munitions of war is that it is frequently advisable to control the intermediates as well as the end products—the direct military items. In the case of raw materials, sulfur, for example—it may be logical to control the raw material instead of, or in addition to, derivatives—where the raw material is a key item and enters commerce on a large scale. By restricting the availability of strategic chemicals, (whether they be raw materials, intermediates, or finished products) which are in short world supply, the objectives of national security are implemented.

### Chemicals on the List

Found on the Positive List (as of Dec. 31, 1949) are the basic coal-tar work-horses of the chemical industry, benzene, toluene, phenol; key intermediates such as aniline, beta naphthol, diphenylamine, chlorobenzene, nitrobenzene, and ortho toluidine; important plasticizers of phthalate types; also tricresyl phosphate. Well known to the public is the great significance of rubber, and therefore rubber-compounding agents embracing accelerators, antioxidants, and carbon black appear on the List. Synthetic resins, with their manifold uses in the modern world, likewise require control for they played a prominent

part in the recent war and the newer types such as polyethylene and polytetrafluoroethylene are full of potentialities. Improvers of gasoline and motor oils add measurably to the performance of military equipment, which accounts for the inclusion of antiknock compounds (tetra-ethyl lead), gum inhibitors, and numerous types of oil additives.

Many but not all of the products mentioned are of coal-tar origin. There are other organics of non-coal-tar derivation deemed strategic enough for a place on the List. These include a variety of solvents—acetone, methyl ethyl ketone, furfural; alcohols of special types including the polyhydrics, ethylene glycol and glycerine; parent substances of explosives—pentaerythrite, hexamethylene-tetramine, and dicyandiamide.

In the inorganic realm are represented catalysts for various purposes, including vanadium and nickel types, phosphoric acid, anhydrous hydrofluoric acid and anhydrous aluminum chloride; nitrates, chlorates, perchlorates—items associated with explosives; rocket propellant materials—hydrazine, hydrogen peroxide, and permanganates. Heavy water may be cited as a representative of atomic energy interest. Certain metallic salts, e.g., those of molybdenum and tungsten, show the interest toward durable, heat-resistant metals. Explosives and explosive stabilizers are repre-

sented by dynamite, lead thiocyanate, mercury fulminate, and diphenylamine. (Note: Military explosives, such as TNT, RDX, and others are licensed by the State Department as munitions of war and hence are not found on the OIT Positive List.).

Not all of the chemicals were carried on the Positive List as 1949 closed, for reasons of security alone. A limited number bore the imprint of short supply, these being largely the fertilizer materials of nitrogenous and potassic types, tin compounds, and the medicinal quinidine. As soon as the supply-demand situation reaches a comfortable balance in items on the List for supply reasons only, it may be expected that they will be deleted.

#### Companion Licensing Agencies

The Office of International Trade, while acting as the Government's chief licensing authority for chemicals, has companion agencies that also participate in this field. The State Department already has been mentioned as licensing military explosives; to these may be added war gases. Another agency holding top interest at this time is the Atomic Energy Commission. Under a special law, AEC licenses uranium and thorium chemicals and "facilities for the production of fissionable material." The Treasury Department licenses narcotics as part of its overall operations in controlling traffic in this field.

## EXPORT CONTROL OF CHEMICALS . . .

### Geographic Control

A significant difference between the List of Aug. 12, 1949, and its predecessors lay in the geographic demarcation of control. Prior to that date, items on the List required a license for any destination except Canada. With the List of August 12, a differentiation is established. Some items require a license only when shipped to R countries, defined as the European countries together with their nearby possessions, and may be shipped to all other areas without the obligation of a validated license. Other commodities, carrying the RO symbol, require a license not only to R but to all other countries except Canada (0 countries). Chemicals in the RO category obviously carry an extra security risk which impels practically world-wide surveillance.

### Small Shipments Exempt

The Office of International Trade has always tried to keep the burden on exporters as light as possible consistent with adequate control, and therefore makes provision whereby small shipments of Positive List commodities may be made without a license. A limiting value for each Positive List item has been established, up to which shipment can be made without a license (the so-called GLV limit). For chemicals the value is generally \$100 but ranges from \$5,000 (for benzene and naphthalene) down to "none" (e.g., deuterium) where it is necessary to screen even

the smallest quantity intended for export.

The Office of International Trade maintains the policy of continuous review of the Positive List in the light of new information and new developments affecting individual commodities. Should a new strategic use be developed for an old chemical, that chemical probably will be added to the List. On the other hand, if investigation reveals that an item carried on the List fails to measure up to the criteria of a controlled material, it becomes subject to deletion. Decisions resulting from such reviews are announced to the public as promptly as possible.

### Report by Secretary

The Secretary of Commerce is required by law to report quarterly on the operations of the Department in licensing commodities for export. Nine such reports have appeared, and they provide a concise summary of the end result of applications submitted to OIT. The Ninth Report contains a tabulation of the quantities of commodities licensed during the third quarter of 1949 broken down into the individual Positive List items or small groups of items. Another table provides the dollar value of export licenses issued for countries in Eastern Europe during the first and second quarters of 1949 and for each quarter in 1948. The breakdown here is by country and major commodity group. For the group

Chemicals and Related Products, a total value of \$4,897,000 was licensed to Eastern Europe in the first quarter 1949; in the second quarter a sharp drop to \$2,240,000 occurred. The most active countries figuring in Eastern European licenses issued during the first half of 1949 were Czechoslovakia, Yugoslavia, Finland, Poland, and Hungary. The USSR itself accounted for only a relatively insignificant part of the total. Licenses issued do not as a rule result in shipment of the full amount licensed, and there is always some lag from the time of licensing to shipment. Actual shipments of chemicals to Eastern Europe in the first two quarters of 1949 were only \$917,000 and \$1,612,000, respectively.

#### Appeals Board

Recognizing that the denial of licenses may at times seem unjust or create hardship, applicants are provided the opportunity to appeal an adverse decision or an administrative regulation. The Appeals Board, composed of three officers of the U.S. Department of Commerce, considers these appeals and has the power to change the action taken by a licensing officer. During 1949, only three appeals on chemicals were presented. This small number attests the overall confidence of the public in the fairness of those who pass judgment on applications.

#### Effectiveness of Control

The question may well be asked, how effective is export control? The answer is difficult to give since economic facts in some parts of the world are not readily available. However, there can be no doubt that shortages of critical materials exist in certain countries. The demand for licenses furnishes one evidence of lack of self-sufficiency. Given time, many of the deficiencies can be made up, but time is the precious asset counted on to relieve international tension. As part of the aim of implementing foreign policy, it is felt that the restriction over exports serves its purpose.

---

#### Sawyer to Stanford Research

Dr. Frederick G. Sawyer, editorial representative of the eleven Western states for the American Chemical Society, has joined the staff of Stanford Research Institute, Stanford, California. His primary assignment will be the administration of the Institute's Air and Water Pollution Research program. He holds the B.S., M.S., and Ph.D. degrees in chemical engineering from the Polytechnic Institute of Brooklyn. In 1946, Dr. Sawyer set up, in San Francisco, the American Chemical Society's West Coast editorial offices as a news-gathering agency. He has been associate editor of *Chemical and Engineering News* and *Industrial and Engineering Chemistry*.



## COUNCIL

### OFFICERS

*President*, Lawrence H. Flett

*Secretary*, Lloyd Van Doren

*Vice-president*, Raymond E. Kirk

*Treasurer*, Frederick A. Hessel

### COUNCILORS

Gene Abson, *Chicago Chapter*

R. P. Parker,

C. C. Concannon, *At-Large*

*New Jersey Chapter*

M. L. Crossley, *At-Large*

L. F. Pierce, *Los Angeles Chapter*

Gustav Egloff, *Past President*

Donald Price, *At-Large*

Karl M. Herstein,

William T. Read

*New York Chapter*

*Washington Chapter*

G. M. Juredine, *Ohio Chapter*

Charles W. Rivise,

R. H. Kienle, *At-Large*

*Pennsylvania Chapter*

Harold A. Levey,

Maurice Siegel, *Baltimore Chapter*

*Louisiana Chapter*

Foster D. Snell, *Past President*

C. P. Neidig, *At-Large*

Florence E. Wall, *At-Large*

E. H. Northey, *At-Large*

James R. Withrow, *At-Large*

Rev. J. J. Pallace, *Niagara Chapter*

Lincoln T. Work, *At-Large*

The Minutes of the March Council Meeting will appear in the May issue of **THE CHEMIST**.

### Addresses Wanted

It will be appreciated by the Secretary of **THE AMERICAN INSTITUTE OF CHEMISTS**, if the present addresses of the following members are sent to

him. The last-known address of each member is given below:

Mrs. Eleanor Anderson Maass  
Dep't of Biochemistry  
University of Wisconsin  
Madison, Wis.

Mrs. Themis Askounis Klotz  
1725 Orrington Ave.  
Evanston, Ill.

Maurice Simon Beyt  
Route 1, Box 274-A  
St. Martinsville, La.

Dr. Joseph R. Cataldo  
1120 E. 16th Ave.,  
New York 60, N.Y.

George A. Contos  
2178 15th St.,  
Astoria, L.I., N.Y.

William D. Cooke  
3708 Spruce St.  
Philadelphia, Pa.

John J. Craig  
913 Morningside Drive  
Jeffersonville, Ind.

Charles P. Dillon  
1709 Tremont St.  
Galveston, Texas

Arthur H. Gladstein  
45 E. 92nd St.  
Brooklyn 12, N.Y.

Dr. William K. T. Gleim  
6231 Ellis Ave.  
Chicago 37, Ill.

David F. Hinkley  
Washington, D.C.

William E. Jensen  
1029 Coolidge Ave.  
Union, N.J.

William H. Kanninen  
2238 Morris Ave.  
New York 51, N.Y.

Samuel Krimm  
2540 Ocean Ave.  
Brooklyn 29, N.Y.

Irving A. Kupersmith  
Paseo de la Reforma 380  
Mexico, D.F.

Miguel A. Manzano  
Hotel Midway, 100th St. & Broadway,  
New York, N.Y.

Mrs. Virginia March Kline  
4001 Mineral Pt. Road  
Madison 5, Wisconsin.

Mrs. Alice Misgades Dekker  
100 Greenwood St.  
New Haven, Conn.

Elio Passaglia  
Barrett Div. Allied Chemical & Dye  
Corp.,

Margaret & Bermuda Sts.  
Philadelphia 37, Pa.

Eli Rantzman  
108 Field Place  
New York 53, N.Y.

Robert V. Seaman  
Heckethorn Mfg. & Supply Co.  
Littleton, Colorado

Herbert Q. Smith  
Dept. of Chemistry, Rutgers Univ.  
New Brunswick, N.J.

Helen Stottler  
184 Pennsylvania Ave.  
Frederick, Md.

Leon Zolondek  
1694 Prospect Place  
Brooklyn, N.Y.

## Local Chapter News

### C. P. Neidig, F.A.I.C.

#### Baltimore

*Chairman*, Marc Darrin

*Vice Chairman*,

Rev. E. S. Hauber, S. J.

*Secretary-Treasurer*,

J. Bernard Edmonds

*Representative to National Council*,  
Maurice Siegel

*Reporter to The Chemist*,

Richard B. Treash

The Baltimore Chapter held a lecture meeting, March 22nd, at the Chemistry Lecture Hall, Loyola College. The speaker was Dr. Henry Freimuth, toxicologist of the City of Baltimore, who gave an interesting illustrated lecture on "Chemistry in Crime Detection." The activities of Dr. Freimuth are quite familiar to Baltimoreans, since the *Baltimore Sun* in its Feature Section recently had an article dealing with the subject of scientific crime detection in

## LOCAL CHAPTER NEWS

Baltimore. However, those who attended this lecture received a much better insight into this fascinating subject.

### New Jersey

*Chairman*, Dr. P. M. Giesy

*Vice Chairman*, Dr. C. A. Amick

*Secretary*, Harry Burrell

*Treasurer*, John B. Rust

*Representative to National Council*,

Dr. R. P. Parker

On December 12th the New Jersey Chapter held a joint dinner meeting with the North Jersey A.C.S. Section at the Newark Athletic Club. Dr. Myril C. Shaw, of Rutgers University, spoke on "The Chemistry of Asbestos." Because of the holiday season, no meeting was held in January, but on February 27th a very well attended symposium on "Safety in the Chemical Laboratory" was held in the auditorium of the Calco Chemical Division of the American Cyanamid Company. Following a dinner in the Calco cafeteria, a panel of safety experts from nearby large laboratories explained their safety practices and related many accident experiences, some of them tragic and many of them humorous. After a spirited discussion, a colored movie, prepared by the Calco Laboratory, was shown. The members of the Safety Panel were: Dr. J. H. Thelin, of Calco; A. H. Christian, of Merck & Company; E. E. Willauer, of Esso Research Center; C. R. Bartels, of

E. R. Squibb & Sons; Dr. W. H. Vinton, of du Pont Photo Products, and Dr. L. P. Rankin, of Bakelite. The meeting was arranged and conducted by Dr. R. P. Parker.

The New Jersey Chapter will soon elect a new slate of officers under the procedure of its new constitution. Nominations made by at least five Fellows should be forwarded to the Chapter Secretary immediately.

---

The Niagara Chapter, AIC, is making a survey of pension plans in chemical industry, which prevail in the Niagara area.

### Ohio

*Chairman*, Robert B. Waters

*Chairman-elect*, Dr. George F. Rugar

*Secretary-Treasurer*,

Harold M. Olson

*Representative to National Council*,

G. M. Juredine

The Ohio Chapter has organized an interesting program in connection with the award of Honorary AIC membership to Dr. James Withrow:

Place: Hotel Carter, Cleveland,  
Ohio.

Date: April 27, 1950.

#### Tentative Program

11:00 a.m. Tour of General Electric Research Laboratories at Nela Park.

1:15 p.m. Luncheon at General Electric Cafeteria.

3:00 p.m. Business Meeting, Carter Hotel.

4:00 p.m. "National Problems and the Chemist" by Dr. Harry N. Holmes.

5:30 p.m. Informal Reception for Dr. Withrow.

6:30 p.m. Filet Mignon dinner, followed by program at which the Certificate of

Honorary Membership will be awarded to Dr. James R. Withrow.

Reservations for the dinner should be sent to: Harold M. Olsen, Secretary of the Ohio Chapter, c/o The Harshaw Chemical Company, 1945 E. 97th Street, Cleveland, Ohio.

## AIC Breakfast (A Report)

Paul H. Horton, F.A.I.C.

*Horton Chemical Products, P.O. 2361 Oklahoma City, Okla.*

AT THE Fifth Southwest Regional Meeting of the American Chemical Society, held in Oklahoma City, December 8th to 10th, an innovation was presented when a breakfast was arranged for members of THE AMERICAN INSTITUTE OF CHEMISTS in attendance. There were twenty-three present for the breakfast and several long-time members commented that it was the first INSTITUTE function of any kind that they had been privileged to attend, living as they do in this region of magnificent distances. It was decided by acclamation to ask that another such get-together of AIC members be arranged for the Sixth Regional Meeting, to be held in San Antonio in December, 1950.

Last July, one-hundred and seventeen AIC members living within a radius of some five-hundred miles of

Oklahoma City were polled as to the desirability of having their own function at the ACS meeting and the response was gratifying. Forty per cent replied of whom twenty-one expected to attend. To avoid conflicts with other activities, the meeting was scheduled as a breakfast, although breakfasts usually limit the available time and require early rising.

Dr. Mark R. Everett, F.A.I.C., dean of the University of Oklahoma Medical School, presided and several short and excellent talks were presented. Dr. J. David Reid, F.A.I.C. of Southern Regional Research Laboratories in New Orleans, and chairman of the Louisiana Chapter, AIC, welcomed into his chapter all members resident in Texas, Arkansas, and Oklahoma, in accordance with the recent chapter assignments made by the national organization. He then

## AIC BREAKFAST

went on to give a clear, succinct account of the advantages of INSTITUTE membership to chemists in government employment. He was followed by Dr. Simon Miron, F.A.I.C., research chemist for the Pan American Refining Corporation at Texas City, who spoke on the INSTITUTE and the industrially employed chemist. Dr. Ray Q. Brewster, F.A.I.C., head of the Chemistry Department of the University of Kansas, then spoke from the academic point of view, after which Dr. John B. Entrikin, F.A.I.C., head of the Chemistry Department of Centenary College, Shreveport, summed up the meeting.

In addition to the above, there were present: Dr. W. B. Whitney, Phillips Petroleum Company, Bartlesville, Okla.; Dr. E. Wertheim of the University of Arkansas; Dr. George R. Gray, Baroid Sales Division of National Lead Company, Houston; Dr. W. O. Milligan of the Rice Institute, Houston; Dr. Vernon M. Stowe, Aluminum Research Laboratories, East St. Louis; Dr. H. H. Bliss of the University of Oklahoma; Hayden Roberts of Halliburton Oil Well Cementing Company, Duncan, Oklahoma.; C. A. Burns, Southern Alkali Corporation, Lake Charles, La.; Dr. W. M. Potts of Texas A and M College; Will H. Shearon, Jr., of *Chemical and Engineering News*, Houston; E. Clarence Oden of Cities Service Refining Corporation, Lake Charles, La.; Floyd W. Neeley, Pot-

ash Company of America, Carlsbad, N.M.; Earl Adams, Vickers Petroleum Company, Potwin, Kansas; R. M. Donaho, Hughes Tool Company,

## For Your Library

### Patent Practice & Management

*By Robert Calvert, Ph.D. with a foreword by Alan N. Mann, Esq. Scarsdale Press. 385 pp. \$5.00.*

Over the past score of years the present reviewers have had the opportunity and need to read a great many books on patents—some excellent, some poor. The present volume by Robert Calvert, in their opinion, ranks very high indeed, and should be considered as a "must" by all who are interested in patents. The style is clear and easy to understand. Specific references are few but well chosen. This is a great help to the individual who deals with patents only occasionally, as he is apt to be confused by too many references.

Some unusual, interesting, and thought-provocative chapters are, "Special Incentives for Inventors and Executives," "Tax Law and Research," and "Foreign Patents." This does not mean that the other chapters are not excellent. On the contrary, as stated above, anyone who is interested can not fail to profit by reading this book from beginning to the end.

—Dr. Frederick A. Hessel, F.A.I.C.

—Dr. Lloyd Van Doren, F.A.I.C.

### The Chemical Constitution of Natural Fats

*By T. P. Hilditch. John Wiley & Sons, Inc., 1947. XIII + 554 pp. \$9.00.*

This is a second edition of an excellent monograph on the natural fats. The object of this work is to give a comprehensive account of the constitution of the fats and more especially of the glycerides, which are produced naturally in plants and animals. The book is intended to treat the natural fats as a group of organic chemical compounds. This does not mean that the materials in question are not considered from the standpoint of their

use as industrial raw materials or with reference to their biochemical functions in the organisms in which they are formed, but the primary object is to give an exhaustive presentation of our present organic chemical knowledge of the natural fats.

The book contains chapters on the component acids of fats of various sources followed by chapters on the component glycerides of the same fats. Also, included are chapters on fat biochemistry, on the constitution of fats, on synthetic glycerides and on the experimental techniques employed in the quantitative investigation of fats. This new edition has been enlarged by about 100 pages. Numerous tables, bibliographies and indexes enhance its value.

—William H. Van Delden, F.A.I.C.

### Colloids—Their Properties and Applications

By A. G. Ward, M.A. Interscience Publishers, 133 pp. 5" x 7½". \$1.75

This is a simple, but not elementary, account of colloid phenomena and some of their applications to the arts. The author, a former scholar of Trinity College, Cambridge, England, desired to present recent progress in colloid science in less advanced form than that given in most publications on the subject.

—Dr. John A. Steffens, F.A.I.C.

### Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

• Verlag Chemie, Weinheim/Bergstr. *Richard Willstaetter — Aus meinem Leben*, edited by Arthur Stoll, 1949, 462 pp., 50 ill. (DM 28). This autobiography is one of the outstanding books printed in Germany in recent years and it should be translated into good English and made available to all those who would like to get an insight into the thinking and working methods of a great scientist, Richard Willstaetter (1872-1942), Nobel-prize winner (1915), beloved teacher, great writer, lover of art, an admirer of Germany's culture, yet a proud Jew who became a refugee like so many other victims of Nazism.

• E. & F. N. Spon, Ltd. London W. C. 2: *The Petroleum Chemicals Industry*, by

Richard F. Goldstein, 1949, 449 pp. 92 tables. (63s.) This treatise on those industrial organic chemicals for which mineral oil is the most economic starting point proves to be a dependable and (within its scope) complete work. It describes the sources of petroleum hydrocarbons, the chemistry of paraffins, the manufacture of olefins and the chemical developments based on them, the production of other important classes of hydrocarbons, such as naphthenes and aromatics, as well as that of aldehydes, ketones, esters, nitriles, amines, etc., and of the more important by-products.

• The Chemist & Druggist, London W. C. 2: *Pharmaceutical Emulsions and Emulsifying Agents*, by L. M. Spalton, 132 pp. (5s.) Over three-hundred of the better known English and American emulsifiers are included in the very practical classified index of this valuable aid for those interested in the preparation of stable emulsions. It also presents briefly the theory of emulsions and their formulations and preservations.

• The Pharmaceutical Press, London W.C.1: *The National Formulary* 1949, by the British Medical Association and the Pharmaceutical Society of Great Britain, 128 pp. (4s.) This is a handy pocket-book listing British standard formulas, cautions, dosages, and many proprietary preparations as well as their respective official drugs with identical or similar therapeutic effect.

• The Northern Publishing Co. Ltd. Liverpool 1: *Tablet Making*, by Arthur Little and K. A. Mitchell, 1949, 121 pp., 41 ill. (15s) This book, written by two authorities, fills a great need; it describes fully the equipment and processing details of all types of tablets. A group of representative formulas is also included in the volume.

The Chicago Section of the American Chemical Society announces that its Sixth National Chemical Exposition will be held in the Chicago Coliseum, September fifth through ninth. Its theme will be "A Half Century of Chemical Progress."

## HELP!



### A Column of Advice on Personal Problems

Please send all requests to Chemists' Advisory Committee, c/o The Chemist, 60 East 42nd Street, New York 17, N.Y.

No answer can be complete or entirely satisfactory. The committee or one of its members will be glad to meet with individuals by appointment, for further discussion of their problems.

#### Inquiry No. 76

I have been employed as a research leader for a number of years under conditions that are very agreeable except for one factor. My employer has not attempted to commercialize the various synthetic products which I have produced. On my own time with the knowledge of my employer, I have had two of them evaluated by experts who have approved them. My employer has other (non-chemical) divisions that are very active commercially but my division seems to be kept for window dressing rather than for exploitation business-wise. What would you suggest I do?

#### Answer

Since you find your position agreeable in all respects save one and you cannot foretell the disadvantages of another position, our counsel is that you consider any move carefully. We presume that you have discussed your problem with your superior without success. With his permission only, you might try stating your case in writing or in person to his superior. The danger here is that you might be considered presumptuous and the result might be more unhappiness. You might

try advertising for a position and answering ads. This will enable you to crystallize your thoughts as to staying on or leaving. In any event do not make a hasty decision.

#### Inquiry No. 92

I am a recent graduate working in a clinical laboratory. Because my work is routine I am not satisfied. Being a woman, opportunities for me are limited. I am thinking of going to night school to take advanced courses to broaden my opportunities and would appreciate receiving your advice.

#### Answer

At present, opportunities for women chemists in non-routine work are limited. You might consider studying stenography and typing. There has always been a shortage of good chemically trained stenographers. The compensation is generally higher than that of laboratory technicians. Other openings for which you might consider further study are for technical editing, librarian, and specialized work in cosmetics and foods where women have an inherent advantage over most men. Only if you have extraordinary ability and ambition should you consider further chemical study.

### Booklets

"The Bolsey Portable Microfilmer and Reader." Information sheets. The Migel Distribution Co., Inc., 118 East 25th Street, New York 10, N.Y.

"Autoclean Dust Filter. Bulletin 491." The Day Co., 810 Third Ave., N.E., Minneapolis 13, Minn.

"RP 1991. A Study of Laboratory Burners for Natural Gas." National Bureau of Standards, U.S. Department of Commerce, Washington 25, D.C.

"New Portable Concrete Mixer. Bulletin No. M13-B1." Denver Equipment Company, Department 385, Denver 17, Colorado.

"New Bete Fog Nozzle for Fine Atomization." Information sheet. Bete Fog Nozzle Company, Greenfield, Mass.

"Books and Periodicals." Catalog. Interscience Publishers, Inc., 215 Fourth Avenue, New York 3, N.Y.

## Condensates

**Ed. F. Degering, F.A.I.C.**

*Armour Research Foundation*

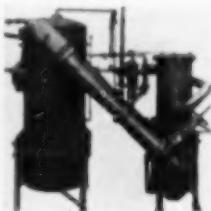
Ethylene oxide may undergo explosive polymerization in the presence of acids, bases, chlorides such as  $\text{FeCl}_3$  or  $\text{SnCl}_4$ , and, in the presence of water, ions such as  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ , or  $\text{CO}_3^{2-}$ , which act as polycondensation catalysts.

The cost for respective courses per credit hour is about \$4.06 for teaching, \$11.05 for law, \$15.87 for dentistry, and \$26.96 for medicine.

Freedom has its imperfections but they are the imperfections that arise from the human failings to which we are all subject and can be cured only as human beings progress spiritually and naturally to a greater thoughtfulness for their neighbors.

—Crawford H. Greenewalt, F.A.I.C.

In 1913, the ten greatest inventions of our time were listed as: airplane, automobile, cyanide process, electric furnace, electric welding, induction motor, linotype machine, moving picture, steam turbine, and wireless communication. Today one would delete only the cyanide process and add, perhaps, atomic fission, electronics, rocket propulsion, synthetic techniques, and television.



## WHAT WILL SUMMER HOT WEATHER DO TO YOUR PROCESS

Croll-Reynolds CHILL-VACTORS frequently show a good profit over the total cost in extra production the first season, and they have many years of maintenance-free service. There are usually extra benefits in better quality and more uniform quality.

CHILL-VACTORS have many advantages, but are not perfect. In general, they are limited to temperatures above 32°F. They require more condenser water than mechanical refrigeration, but almost any natural water, including sea water, can be used. There are too many advantages to list here. The most important are:

### Low Cost

Can be operated by low pressure steam  
No refrigerant except water  
No moving parts, noise or vibration  
Practically no operating supervision  
Some liquids or solids can be cooled direct without brine or other circulating fluid.

Made in sizes from a few tons to 1,000 tons or more (1 ton—12,000 B.T.U. per hour).

Individual engineering study will be given without obligation to each inquiry. This also applies to any industrial vacuum requirement down to a few microns absolute pressure.

**CROLL-REYNOLDS CO., Inc.**

17 JOHN STREET, NEW YORK 7, N. Y.

CHILL-VACTORS STEAM JET EVACTORS CONDENSING EQUIPMENT



# Professional Services

## ELLIS-FOSTER COMPANY

Established 1907

*Research and Consulting Chemists*

Specializing in Synthetic Resins and their  
Plastics and Related Subjects

4 Cherry Street      Montclair, N. J.  
Telephone MONTclair 2-3510

## MOLNAR LABORATORIES

Organic Process Development, Control  
Laboratory and Pilot Plant Studies

*Your Inquiries Invited*

211 E. 19th St.   New York 3, New York  
Telephone: GRAmercy 5-1030

## National Council Meeting

The next meeting of the National  
Council, A.I.C., will be held May  
11, 1950, at The Hotel New Yorker,  
New York, N.Y., at 9:30 a.m.

## Condensates (Con't.)

Colchicine, an alkaloid derived from the  
bulbous herb known as meadow saffron or  
autumn crocus, is known to arrest multipli-  
cation of cancer cells in experimental  
animals.

Your hand is worth a million when it  
meets another hand in friendship. It may  
not mean a thing today. It may not bring  
results tomorrow. It may develop nothing  
for a week, a month, or even a year. But,  
once you sow the seed of friendship, the  
results are bound to come—make no mistake  
about that.

—Bulletin

## PHOENIX

### CHEMICAL LABORATORY, INC.

*Specialists in Petroleum Products*

*Chemical Tests      Physical Tests*

*Qualification Tests*

3953 Shakespeare Avenue

CHICAGO 47, ILL.

## EVANS

### RESEARCH & DEVELOPMENT CORPORATION

*Organic and Inorganic Chemistry  
Processes — Products*

*Unusually Extensive Facilities*

*Your Inspection Invited*

250 EAST 43RD ST., NEW YORK 17, N. Y.

## THE LENTO PRESS

*Distinctive Printing*

441 Pearl Street      New York, N.Y.  
WOrth 2-5977





FURS



PHOTOGRAPHY



CATALYSTS



LEATHER



PAPER



TEXTILES

## For Quality CHROME ALUM

(Chromium Potassium  
Sulfate)

Buy B&A

**IN KEEPING** with Baker & Adamson tradition, B&A's technical Chrome Alum is a product of outstanding quality for *industrial* use, just as its Reagent, ACS, grade is the highest purity for *laboratory* use.

In photography, for example, leading producers of photographic chemicals have found the purity of B&A Chrome Alum meets their most exacting requirements. So, too, has the fur trade with its demand for chrome alum of consistently high quality to treat valuable pelts.

Due to this outstanding quality as well as ready availability, B&A Chrome Alum is *first choice* in many other fields as well. Among its uses are as a mordant in textile dyeing and printing; in the manufacture of other chromium mordants; in leather tanning; in the preparation of catalysts; as a hardening agent for sutures; in the paper field for increasing paper filler retention as well as for recovering fiber and filler losses from paper mill white waters.

For your requirements, you can be *sure of the quality, and sure of the source* when you "Specify B&A Chrome Alum"!

FINE CHEMICALS IN COMMERCIAL QUANTITIES

## BAKER & ADAMSON Fine Chemicals

GENERAL CHEMICAL DIVISION  
ALLIED CHEMICAL & DYE CORPORATION

40 RECTOR STREET, NEW YORK 6, N. Y.

Offices: Albany\* • Atlanta • Baltimore • Birmingham\* • Boston\* • Bridgeport\* • Buffalo\* • Charlotte\*  
Chicago\* • Cleveland\* • Denver\* • Detroit\* • Houston\* • Los Angeles\* • Minneapolis\* • New York\*  
Philadelphia\* • Pittsburgh\* • Portland (Ore.)\* • Providence\* • St. Louis\* • San Francisco\* • Seattle  
Seattle (Wash.) • Yakima (Wash.)

In Wisconsin: General Chemical Company, Inc., Milwaukee, Wis.  
In Canada: The Nichols Chemical Company, Limited • Montreal\* • Toronto\* • Vancouver\*

SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

\* Complete stocks are carried here.

